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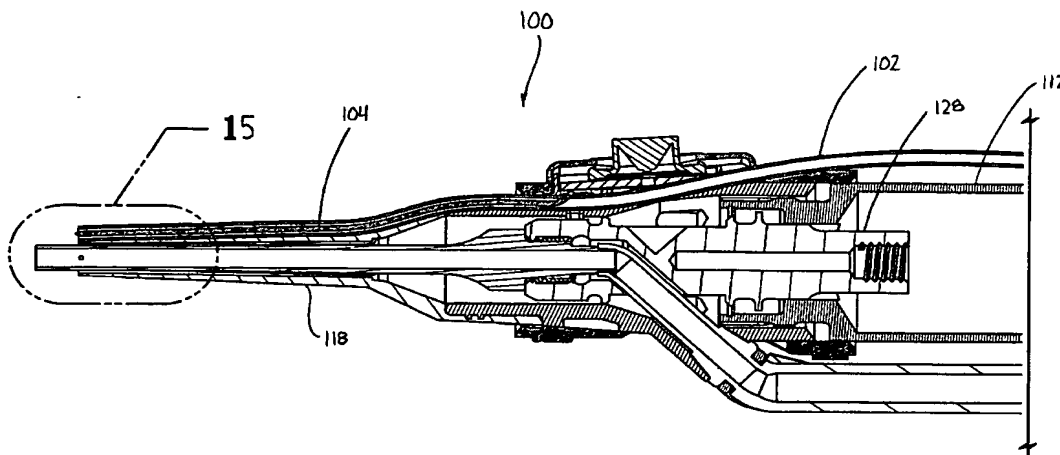
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[Continued on next page]

(54) Title: ELECTROSURGICAL INSTRUMENT FOR FRAGMENTING, CUTTING AND COAGULATING TISSUE



(57) Abstract: An electrosurgical instrument for fragmenting, cutting and coagulating tissue is described which includes a hand-piece, a tool assembly and a nosecone. Preferably, the tool assembly is formed of an electrically conductive material and includes a first end having a distal tool tip and a second end adapted to be connected to an acoustic vibrator. The tool assembly at least partially defines an aspiration channel and is preferably supported by the handpiece. The nosecone is positioned about a distal end of the handpiece and a proximal end of the tool assembly in a fluid tight manner. A switch assembly for controlling delivery of electrosurgical energy to the tool assembly is supported on the nosecone. Preferably, the switch assembly is overmolded onto an inner housing of the nosecone by an electrically insulative material. In a preferred embodiment, the electrosurgical instrument may include an ionizable gas supply channel which communicates with an electrode to provide plasma coagulation.



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/29712

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A61B17/22 A61B18/14

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A61B A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 931 047 A (HORNLEIN ROBERT W ET AL) 5 June 1990 (1990-06-05) cited in the application column 3, line 11 - line 47 column 4, line 59 - column 5, line 6; figures 1-3	1-12
Y	----- US 6 402 748 B1 (KELM VERNITA ET AL) 11 June 2002 (2002-06-11) column 5, line 18 - line 35; figures 2,3	1-12
A	----- US 2001/049524 A1 (SARAVIA HEBER ET AL) 6 December 2001 (2001-12-06) paragraphs [0068], [0073], [0115]; figures 6,10,11 ----- -/--	1

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
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- "P" document published prior to the international filing date but later than the priority date claimed

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- "&" document member of the same patent family

Date of the actual completion of the international search

9 February 2004

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# INTERNATIONAL SEARCH REPORT

International Application No

US 03/29712

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 376 089 A (SMITH ROGER F) 27 December 1994 (1994-12-27) column 5, line 18 - line 31; figure 4 -----	1
A	US 2001/027601 A1 (RESCHKE ARLAN JAMES ET AL) 11 October 2001 (2001-10-11) paragraph [0027]; figure 2 -----	12

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 03/29712

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-15

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-15

electrosurgical handpiece with fluid tight dielectric seal  
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2. claims: 16-19

electrosurgical instrument with ionizable gas supply channel  
and electrode interacting therewith  
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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/29712

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